

Acceleration Practice Questions

1. What is acceleration? _____

2. Does acceleration change when an object changes **its speed? Its direction?**
Explain. _____

3. Is an object that is slowing down accelerating? **Explain.**

4. Does acceleration have a direction? _____
 What are the direction options for acceleration? _____ or _____

5. How do you calculate acceleration? **Write the formula** in the space provided.

a= — — — — —

6. What are the units of acceleration? _____

7. Draw examples of position time graphs for a. constant speed (zero acceleration), b. positive acceleration, and c. negative acceleration
 a. _____ b. _____ c. _____

8. Draw examples of velocity time graphs for a. constant speed (zero acceleration), b. positive acceleration, and c. negative acceleration.
 a. _____ b. _____ c. _____

Acceleration Practice Problems

Show your work, use correct units throughout.

For each problem (#1-10):

IDENTIFY EACH GIVEN VARIABLE: v_f , v_i , a , and t

USE THIS EQUATION: $a = (v_f - v_i) / t$

NEGATIVE ACCELERATION = SLOWING DOWN (in the positive direction)

POSITIVE ACCELERATION = SPEEDING UP (in the positive direction)

1. A car beginning at rest is moving at 50 m/s after 10 s. What is the car's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

2. A roller coaster started at rest is moving at 60 m/s after 20 s. What is the roller coaster's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

3. A car is moving at 20 m/s and slows to a velocity of 10 m/s in 10 s. What is the car's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

4. A person is running at 4 m/s and slows to a velocity of 0 m/s in 4 s. What is the person's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

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5. A plane is moving at 100 m/s and increases its velocity to 150 m/s over 25 s. What is the plane's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

6. A car begins rolling down a hill and reaches a speed of 25 m/s after 60 s. What is the car's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

7. A bird begins at 1 m/s and slows to 0 m/s in 5 s. What is the bird's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

8. The wind is moving at 6 m/s and suddenly gusts to 8 m/s over 1 s. What is the wind's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f =$ $t =$ $a = ?$			

9. A bus has an acceleration of 2 m/s². If the bus's final velocity after 5 s is 10 m/s, what was the bus's initial velocity?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i = ?$ $v_f =$ $t =$ $a =$			

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10. A truck has an acceleration of 15 m/s^2 . If the truck's initial velocity is 2 m/s , what is the truck's final velocity after 10 seconds?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER
$v_i =$ $v_f = ?$ $t =$ $a =$			

USING PROBLEMS (#1-10) ABOVE ANSWER THE FOLLOWING

11. Which of the above problems represents an object speeding up?

12. Which of the above problems represents an object slowing down?

13. What does negative acceleration mean?

14. Explain 3 ways you can change your acceleration when driving a car.

- 1.
- 2.
- 3.

Acceleration Practice Problems

Show your work, include all units, and highlight your answers.

1. A car begins at rest and rolls down a hill and reaches a velocity of 95 m/s after 60 s. What is the car's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER

2. A bird begins at 1 m/s and slows to 0 m/s in 8 s. What is the bird's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER

3. The wind is moving at 26 m/s and suddenly gusts to 38 m/s over 1 s. What is the wind's acceleration?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER

4. A bus has an acceleration of 12 m/s². If the bus's final velocity after 5 s is 35 m/s, what was the bus's initial velocity?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER

5. A truck has an acceleration of 23 m/s². If the truck's initial velocity is 2 m/s, what is the truck's final velocity after 10 seconds?

GIVEN VARIABLES	EQUATION	WORK / PICTURE	ANSWER